Concordia
UNIVERSITY

GRADUATE STUDIES NEWS

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From the Dean's Desk

"Venturing forth with Ventura"

The Concordia Graduate Studies News is coming of age. Until now, it was produced with the modern analogue of the Gutenberg technology using the typesetting services of a printing firm. But time does not stand still and we have recently joined the ranks of "desktop publishers." Our staff has been trained to typeset the Graduate Studies News in-house using the Ventura Publishing System. With this issue, we are taking advantage of the creation of a new logo for Concordia University and are introducing a new and hopefully better format of our publication.

Objectives

The Graduate Studies News was conceived when I became Dean three and a half years ago. The prime motive for this publication was and is to promote academic excellence. In this context, I had very specific objectives.

In the first place, it was intended to inform the academic community about the graduate programs available at Concordia University. We now have seventy-one such programs and it took two years to give an account of all of them. The process was instructive and informative. While we were outlining our academic programs we began also to profile successful graduate students and focus on the human element of the Graduate School.

Our next goal was to discuss the research and careers of graduate students whose studies were supported by N.S.E.R.C., S.S.H.R.C., and F.C.A.R. We demonstrated and I believe continue to show, that the work of these graduate students demonstrates that the public investment in higher education is both essential and profitable.

At the same time, the Dean's Desk was used to animate discussion on matters of universal concern to graduate students, graduate schools, and universities in general. The reaction to this column has been positive and it seems to have achieved its aim. I will continue these efforts to question and examine issues of interest to us all as academics.

Our main interest will always be the analysis and presentation of Concordia University as an institution of higher learning, and of its Graduate School as an integral component of that institution. As part of this mosaic, we are currently in the process of presenting interviews with my fellow deans outlining their views of the university and of the role of graduate studies in their faculties.

New Focus

The future of Concordia is also taking on a new focus and direction under the leadership of our Rector and Vice-Chancellor, Dr. Patrick Kenniff, as he begins his second mandate. In a recent mission statement, he has outlined in broad terms his plans for the university. Over the next few months, we will discuss these plans from the graduate perspective.

I would like to take this opportunity to thank our editor, Ms. Debbie MacFadden, and Ms. Anne-Marie Laurin, for continuing their efforts to put together an exciting and informative document. I would also like to thank Richard Nantel, our Ventura guru, for having spent many hours over the last few months in our offices giving instruction on the fine points of Ventura. We are now ready to venture forth on our own.

M. E. Szabo
Dean

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Graduate Education in the Faculty of Engineering and Computer Science

Engineering and Computer Science may be one of the youngest Faculties at Concordia University, but its dynamic approach to graduate studies and research has made it one of the foremost Faculties in the country.

Time seems to have little relevancy when it comes to success. Otherwise, external research funding in the Faculty would not have leapt forty-fold; nor would the Faculty have established a reputation as one of the best in Engineering across Canada; nor would its professors and students be making international waves.

This, however, is exactly what has happened in only twenty-five years. Dean M.N.S. Swamy explains it this way: "Our youth gives us many of the advantages associated with youth: strength, vigour, rapid growth and flexibility."

The Faculty of Engineering was founded in 1964, followed four years later by the addition of graduate programs. In 1980, the name of the Faculty was expanded to reflect the growing emphasis on Computer Science. Today, there are more than 100 full-time professors, 85 adjunct and part-time professors, and 25 full-time researchers.

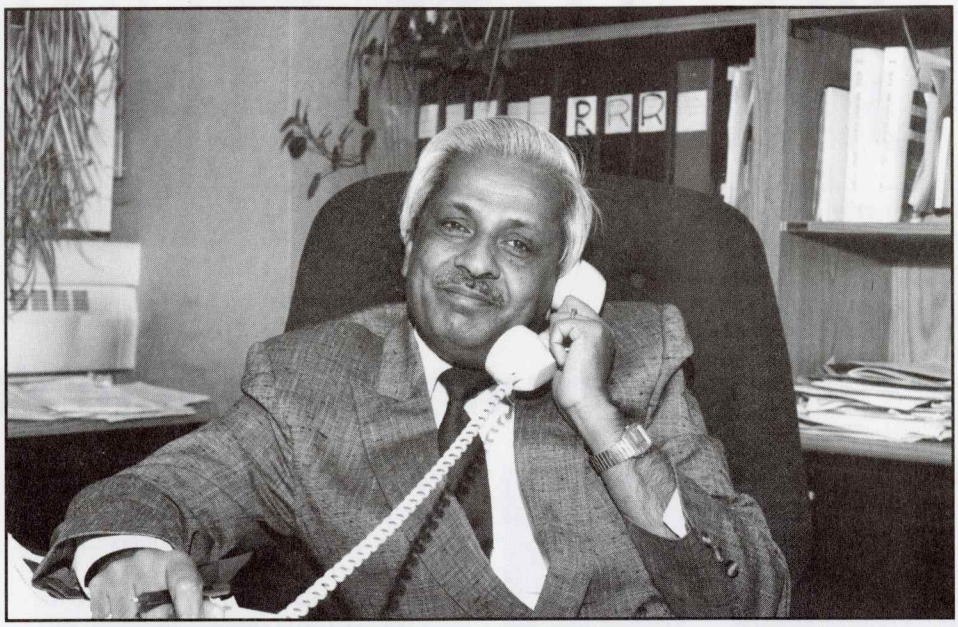
Top 10% of NSERC

During the first year of Graduate Studies in the Faculty, external research funding came to $153,000. Today, the figure stands at $6.47 million. Part of the reason is that several professors in the Faculty are among the top 10% of NSERC grant holders in Engineering across the country.

Departments in the Faculty are gaining enviable reputations. The Departments of Mechanical Engineering and Electrical and Computer Engineering, for instance, rank among the top in Canada in research funding. Seven of the faculty members are among the top 20 Engineering NSERC grant holders in Canada; and in 1989, one of these professors received the highest NSERC grant of the year for Mechanical Engineering.

CRIM

The Departments of Electrical and Computer Engineering and Computer Studies are linked with the Computer Research Institute of Montreal (CRIM), a consortium of four Montreal universities — Concordia, Université de Montréal, Université de Québec à Montréal and McGill University. Concordia faculty and students participate in the three CRIM projects funded by the provincial government as part of its "Action Structurantes" program to create top research teams.



Dean M.N.S. Swamy

Through CRIM, research is carried out in areas such as parallel and distributed processing, VLSA architectures, distributed computer systems, VLSI-design automation, formal model of concurrent systems and performance evaluation.

When CRIM was created, the Associate Dean of the Faculty of Engineering and Computer Science, Charles Giguere, became the first Director. He served in that capacity for several years and is now Vice-Rector, Services, at Concordia.

"Methanol Marathon"

Students in the Faculty of Engineering and Computer Science also distinguish themselves. This year, ten Mechanical Engineering students were the only Canadians chosen from thirty-one North American universities to join the final group of fifteen competitors in the North American "Methanol Marathon." Using a $10,000 grant from Energy Mines and Resources and a donation from GM of a $23,000 car, the students successfully converted the car to methanol fuel. Their efforts won them second place in the marathon.

The Faculty also has several "firsts" to its credit: It is the first — and in fact, the only — to have Bachelor's, Master's, and Ph.D. programs in Building Studies in Canada; the first in Canada to give a Master's of Engineering through evening studies; the first in Quebec to receive accreditation in Computer Engineering; the first Faculty at Concordia to graduate Ph.D. students in general, and the first to graduate a woman Ph.D.

Doctoral and Master's degrees are offered in Civil, Electrical, Mechanical, and Building Engineering, as well as in Computer Science. There is also a Diploma in Computer Science.

When the graduate programs began in the Faculty, the first graduate degree offered — the Master of Engineering — was designed for engineers already working in industry. This program allowed professionals who had received their training years ago, to upgrade and retrain in part-time evening studies.

This early emphasis on part-time studies has shifted over the years to favour full-time studies. Today, three-quarters of students study full-time, one-quarter part-time. Although student numbers don't tell the whole story, as Dean Swamy says,

they do show that the Faculty is not a small operation. "There are still people who feel that because we give graduate courses in the evening and because Concordia has always been known as an undergraduate institution, even if there are graduate programs, they are small. This is not true," the Dean says. He points to total graduate student numbers this year: Electrical and Computer Engineering, 186; Civil Engineering, 49; Building Engineering, 62; and Mechanical Engineering, 108; and Computer Science, 119.

100th Doctoral Student

"There has been a phenomenal increase in the number of graduate students and the number of degrees given each year at convocation. Two years ago we celebrated the 100th Ph.D. student graduating from the Faculty. That's quite a number considering that we started the program only in 1968. A minimum of ten to twelve doctoral degrees and approximately sixty master degrees are given out on a yearly basis now."

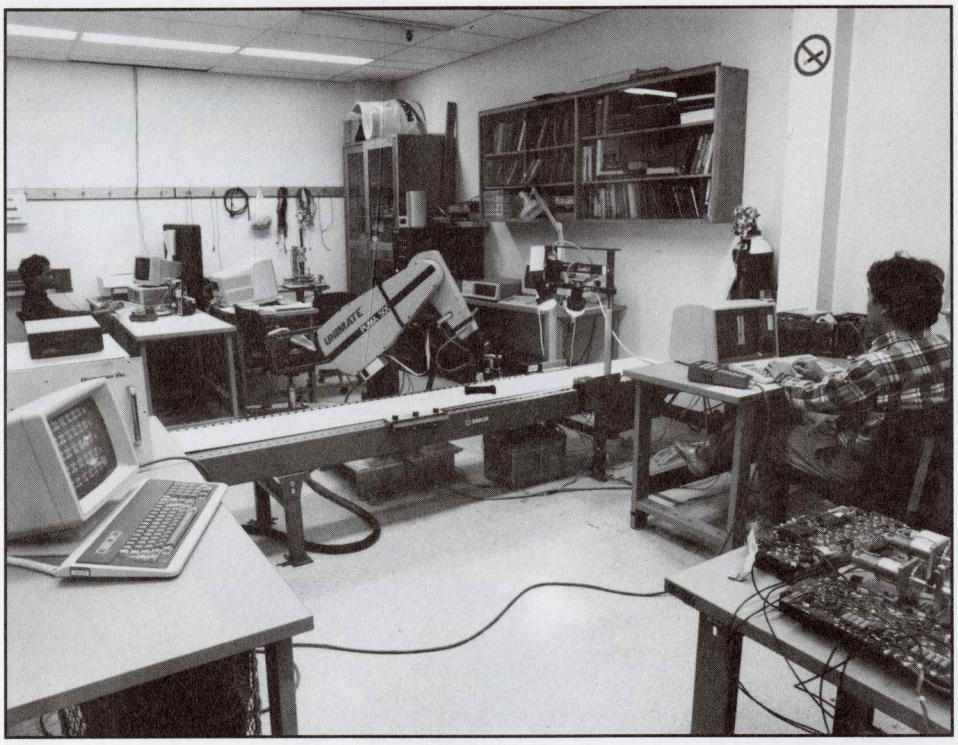
"The students come here because of the reputation of the professors and the kind of research work they are doing. That is reflected in the name the faculty have made for themselves by writing articles in reviewed journals, the kind of conferences they attend, the kind of books they write, the kinds of contacts they have with industry, and the kind of grants they get," Dean Swamy says.

The success of faculty members in gaining so much research funding allows them to provide financial support to their graduate students. The success of students too in getting scholarships from the provincial and federal governments also plays a major part in the increase in graduate students, he says.

Research Centres

Innovation is part of the Faculty's success too, Associate Dean Terry Fancott says. By creating research centres, the Faculty has forged strong university-industry links, given wide scope to research, provided state-of-the-art equipment and kept faculty and students in constant touch with the latest in high technology.

The Centre for Building Studies, established in 1977, is unique in the country and reflects Concordia's response to the needs of the construction industry, one of the largest in Quebec. Major government funding to the centre from 1977 to 1991 totals more than $10 million. This includes a $792,000 Action Structurante grant to the centre's non-profit corporation, SIRICON, where research is underway on computer-aided building design.



Robotics Laboratory

Another research centre, CONCAVE (Concordia Computer-Aided Vehicle Engineering), also has an Action Structurante grant. Through the use of its state-of-the-art equipment worth more than three quarters of a million dollars, the centre carries out projects for industry and government, including Bombardier and Via Rail.

"This centre is totally original in the province of Quebec and probably in Canada in that they do advanced work in vehicular engineering and they get a very large amount of research funding," Associate Dean Fancott says. "There are about twenty students working there for their Master's of Mechanical Engineering or Doctoral degree. The work they are doing is very modern and very specialized."

Two other centres — CIMCENTRE for computer-aided manufacturing and the Industrial Control Centre for industrial automation and robotics — are also well supported by research grants and are pursuing increased research activity, Dean Swamy states.

Another two centres were recently created. The Concordia Centre for Signal Processing and Communications (CONSIPCOM) carries out research in mathematical foundations and practical implementations of a wide range of problems in signal processing and communications. The Centre for Pattern Recognition and Machine Intelligence (CENPARMI) studies expert systems, recognition and image enhancement techniques applied to process documents, data forms, engineering drawings, maps and fingerprints.

International Contacts

The Faculty also plays a major role through several programs such as the joint doctoral degree underway this year with the Southeast University of China. This program is funded by a half million dollar grant from the Canadian International Development Agency, the first time that Concordia has received a direct grant from this federal agency.

Through the program, Chinese students take courses in China, some of which are given by Concordia faculty; they come to Concordia to complete their research work. Four Concordia professors have already been to China to teach, and six students arrived in Montreal this fall for their research work. Dean Swamy was there in December and two other Concordia professors will follow next summer.

The Faculty also participates in inter-university programs with Kyoto University in Japan and Pontificia Universidade Catolica do Rio de Janeiro in Brazil.

Ongoing talks are being conducted with the Indian Institute of Technology, Madras with a view of establishing a joint Ph.D. program. Exchanges of researchers have already been established with the Indian Institute of Science at Bangalore, the

V.L.S.I. Laboratory

Indian Institute of Technology, Madras and the University of Roorkee.

Future Goals

Looking to the future, Dean Swamy says the growth in graduate studies is only limited by lab space. "I think our professors are perfectly capable of getting more funding for research, but we cannot take any more students in big numbers because of the space resources that we have. But hopefully when the new building comes, we will get more space to be able to take more graduate students, Dean Swamy says.

Although the number of graduate students will likely grow, a quota has been set on undergraduate students to keep their numbers stable. There are now approximately 500 graduate students and 1,500 undergraduate students.

From the start, the Faculty has encouraged good undergraduate teaching and contributions to graduate education and research. "I think that's one of the reasons why we have been successful in being able to develop a strong program at the graduate level. Faculty members have been quite aggressive in the development of new programs and structures — in terms of centres and in terms of groups," Dean Swamy says.

A recent change coming in the Faculty is the creation of two Master's programs from the existing Master of Engineering. By next fall, the two options now in the degree, research and course, would form the basis of the two degrees — a Master of Applied Science from the research option, and a Master of Engineering from the course option. This plan was approved by Senate at its December meeting.

Dean Swamy has other changes in mind. He aims to propose that a Master in Engineering Management be offered jointly by the Faculty of Engineering and Computer Science and the Faculty of Commerce and Administration at Concordia.

For now, the Faculty can clearly take pride in the success of its Graduate Studies. Extensive research funds, pioneering work by faculty and students, innovative research centres and unique international ties have combined to create a program recognized across Canada.

Upcoming Doctoral Examinations

HAROLD STAR
Administration
Date: February 9, 1990 at 10:30 a.m.
Location: GM 403-2
Title: *Entrepreneurial Responses to Conditions of High Strategic Uncertainty*

LUCIE LEQUIN
Special Individual Program
Date: February 26, 1990 at 2:00 p.m.
Location: H-773
Title: *De la femme patriarcale à la femme sujet dans le roman québecois de l'après guerre 1945-1951*

FRANCE HENRI
Educational Technology
Date: March 13, 1990 at 2 p.m.
Location: H-769
Title: *La téléconférence assisté par ordinateur dans une activité de formation à distance*

The examinations for the above students will take place in the Hall Building, 1455 de Maisonneuve West, with the exception of Harold Star whose examination will be held in the GM Annex, 1550 de Maisonneuve West.

Editorial Committee :
Chair: M. E. Szabo
Editor: D. MacFadden
Editorial Asst.: A-M. Laurin
Writer:B. Verity
Photographer: C. Belanger
Printing: Concordia Printing Services
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Telephone: *(514) 848-3800*